



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,111	03/31/2006	Yasuhiro Tada	2006-0371A	7206
513 7590 12/11/2007 WENDEROTH, LIND & PONACK, L.L.P. 2033 K STREET N. W. SUITE 800 WASHINGTON, DC 20006-1021			EXAMINER FORTUNA, ANA M	
			ART UNIT 1797	PAPER NUMBER
			MAIL DATE 12/11/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/574,111	Applicant(s) TADA ET AL.	
	Examiner Ana M. Fortuna	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>3/31/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-8 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

The membrane in claim 1 includes limitations such as, "average of slop", "basic permeability"; claim 7 is directed to the membrane by a particular process conditions and composition, the specification does not provide the bases for varying process steps, or composition to achieve the claimed membrane properties.

3. Claims 1-8 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim, includes the limitation of average of slope and basic permeability and its relation to average pore diameter, n sections a)-c); it is unclear whether Applicant is intending to claim a hollow fiber with a variable permeation, e.g. pore size or diameter through the membrane length, and if it its so, it is unclear as to how this conditions are obtained by the process of claim 7.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

States.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-7 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Takamura et al (US 6,299,773). Takamura discloses a hollow fiber polyvinylidene fluoride membrane with a microporous structure and an outside diameter , and thickness within the properties of the present invention (abstract, column 2, lines 15-68); the pore diameter is disclosed as microporous (see column 2, lines last paragraph); the membrane water flux (column 3, first paragraph). Making the membrane from PVDF or in combination with copolymer, and by a melt spinning process is further disclosed (column 3, lines 43-column 4, lines 48; column 5, lines 24-34, and lines 54-61; column 6, lines 8-68, and column 7, lines 1-16); and stretching step to increase the pore size and porosity is further suggested

(column 7, lines 17-20). Takamura teaches adjusting the membrane properties by combining polymers of different molecular weight and properties, and the total percentage of the polymer in the composition, e.g. 35-50 % (column 5, lines 23-27); which meets the 25-50 % of the polymer in claim 7. Claim 5 of the present invention requires that the polymer is a mixture of different molecular weight; Takamura teaches the effect of selecting different molecular weight polymers in the membrane composition in the final membrane, as discussed above, it would have been obvious to one skilled in this art at the time this invention was made to adjust the membrane properties in accordance to the teaching of Takamura to control membrane tensile strength, melt flowability, and final membrane porosity and pore size. The skilled artisan at the time this invention was made can predict that by increasing the percentage of the high molecular weight PVDF or copolymer lower pores and porosity can be obtained in a melt composition having the same percentage of total polymer percentage; and in the contrary, a membrane with low strength and larger pores can be obtained when the amount of the polymer with the lower molecular weight is increased in the composition.

7. The properties as claimed in steps a, b, c in claim 1, and dependent claims appear to be inherent of the membrane made from the same composition, and having the same pore size and membrane thickness, further more, the permeability is a function of the membrane thickness and for the same pore, e.g. microporous, the skilled in the art for the same length of membrane can predict or expect the performance as claimed in the above claims. As to claim 7, making hollow fiber membranes

alternatively using an inner gas as the bore forming fluid, or passing the extrudate or melt through an air atmosphere or directly passing to a cooling bath are techniques of making hollow fiber known by the skilled artisan, one desiring to maintain the pore size reduced it at the hollow fiber outside would have been motivated to expose the extrudate directly to a water bath membrane the outside surface pore size (see Takamura et al (column 6, lines 44-68). The process of making the membrane in the later patent differs in the selected conditions to form the membrane, however, claims 1-8 are products, which allowability is determined based on structure, unless the process imparts a distinct structure (see MPEP 2113 [R-1}).

8. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nohmi et al (US 4,399,035). Patent '035 teaches a membrane having the same pore size, made from the same polymer, commercial PVDF, the same outer diameter and thickness, percentage of porosity and made from a melt composition with the polymer and solvent and extruded directly in a coagulation liquid (abstract, column 23, lines 21-31; column 6, lines 30-61, column 7, second paragraph; column 9, lines 65-column 10, line 34; column 11, last paragraph-column 12, lines 47; column 15, lines 7-15; column 17, lines 36-56; column 18, lines 37-65; column 19, lines 40-54, and table 9, claims 1-4). Claim 1 and dependent claims includes additional properties, e.g. slope. One skilled in this art at the time this invention was made can assume that for a membrane, made from the same material and having the same thickness and pore size and porosity (disclosed in the current specification) can predict or expect for the same membrane length the claimed slope and flux properties when operated at the same

pressure conditions. The PVDF has a molecular weight within the claimed level, e.g. Kynar (column 17, lines 13-19).

9. Claims 1-3 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morikawa et al (US 7,258,914). Patent '914 teaches a membrane made from PVDF with the claimed molecular weight, and having the same diameter, water flux and pore size, e.g. microporous (abstract, column 4, lines 27-44; column 3, lines 12-14; and column 7, lines 30-45). From the pore size and properties disclosed in this patent, the skilled artisan can predict the limitations of claims a-c, by selecting a predetermined pore size range and length.

Double Patenting

10. Claims 1-8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-5 of copending Application No. 11/578,425. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims limitations of the copending application encompass the limitations in the present application. The claims in the present application are narrower, and limited to a particular process, however, those properties seem to be inherent in the product of the membrane in the patent, which is not limited to the process.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

11. Claims 1-8 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4, 6-7, 10, 11 of copending

Application No. 11/629,350. Although the conflicting claims are not identical, they are not patentably distinct from each other because the claims in this application encompass the limitation of the copending application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Patent 4,666,607 teaches making microporous membranes by extruding in an inner liquid; patent 5,022,990 teach microporous PVDF membrane and stretching after removing the solvents. Additional references are directed to PVDF microporous membranes made melt extrusion.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ana M. Fortuna whose telephone number is (571) 272-1141. The examiner can normally be reached on 9:30-6:00 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David R. Sample can be reached on (571) 272-1376. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Application/Control Number:
10/574,111
Art Unit: 1797

Page 8

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ana Fortuna/
Primary Examiner, A. U. 1797

AF
December 09, 2007